

REMARKS/ARGUMENTS

The present Amendment is in response to the Office Action having a mailing date of March 7, 2006. Claims 1-34 are pending in the present Application. Applicant has amended claims 21, 30, 32, and 33. Applicant has also added claims 35-37. Accordingly, claims 1-37 remain pending in the present Application.

Applicant has amended claims 21, 30, 32, and 33 to correct minor errors. Applicant has also added claims 35-37. Support for claims 35-37 can be found, for example, in FIG. 3, items 70 and 80. Accordingly, Applicant respectfully submits that no new matter is added.

In the above-identified Office Action, the Examiner indicated that claims 4-6, 16, 18, 26, and 27 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Examiner also indicated that claims 31-34 are allowed. Applicant welcomes the Examiner's indication that claims 31-34 are allowed and that claims 4-6, 16, 18, 26 and 27 contain allowable subject matter.

In the above-identified Office Action, the Examiner rejected claims 1, 2, 8-10, 13, 14, 20-23, 29, and 30 under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,792,796 (Shukh I). In so doing, the Examiner referenced addendum A, which is FIG. 2 of Shukh I. In Addendum A, the Examiner appeared to associate not the trailing edge 49 of layer 50, but the leading edge of layer 50 as the recited second pole tip.

Applicant respectfully traverses the Examiner's rejection. Claim 1 recites a magnetic head including a body having a leading end and a trailing end. Claim 1 further recites that the body includes a magnetic loop terminating in a write pole tip and a return pole tip that are disposed adjacent to the medium-facing surface and separated from each other by a nanoscale nonmagnetic gap. Claim 1 further states that the return pole tip is disposed between the write

pole tip and the trailing end and the return pole tip has a medium-facing area that is at least two orders of magnitude greater than that of the write pole tip. Claim 13 recites an analogous magnetic recording head for writing information on a relatively-moving medium containing a media layer and a soft magnetic underlayer. Claim 23 recites an analogous magnetic head. Claim 23 recites a first ferromagnetic layer and a first pole tip as well as a second ferromagnetic layer terminating in a second pole tip. The first pole tip and second pole tip are analogous to the write tip and return tip. Thus, claims 1, 13, and 23 all recite that the return (second) pole tip has a medium-facing area that is greater than the medium-facing area of the write (first) pole tip. In addition, claims 1, 13, and 23 all recite that the return (second) pole tip is between the write (first) pole tip and the trailing edge of the body.

In contrast, Shukh I describes a system including a return pole 40 that is the leading pole (see direction 47 of the medium 24) and a write pole 38 that is the trailing pole. See, Shukh I, FIG. 2; col. 3, line 62-col. 4, line 1; and col. 4, lines 24-28. Shukh I also indicates that the trailing pole has a trailing edge 49 that actually writes to the medium. Shukh I col. 4, lines 1-3 and FIG. 2. Shukh I also states that the write pole 38 has a smaller area than the return pole 40. Shukh I, col. 4, lines 24-28 and FIG. 2, items 38 and 40. Thus, Shukh I specifically states that the trailing pole is the write pole and the leading pole is the return pole. Consequently, the system of Shukh I cannot teach or suggest the heads recited in claims 1 and 13, which specifically recite that the return pole tip lies between the write pole tip and the trailing edge. Furthermore, to the extent that Shukh I teaches that the write pole is the trailing pole and the return pole is the leading pole, Shukh I teaches away from the heads recited in claims 1 and 13. Although claim 23 recites a first pole and a second pole, the same analysis holds for claim 23. For example, claim 23 specifically recites that the second pole tip is between the first pole tip and

the trailing edge and that the second pole has a medium-facing area that is greater than that of the first pole tip. As can be seen in FIG. 2 of Shukh I, the tip of the pole 40 apparently has a larger surface area than the tip of the second pole 38. See also, Shukh I, col. 4, lines 24-28 (stating that the pole 40 has a larger surface area than the pole 38). Consequently, the tip of pole 40 corresponds to the recited second pole. However, this second pole is not between the first pole and the trailing edge. Thus, Shukh I also fails to teach or suggest the heads recited in claims 1, 13, and 23.

Moreover, Shukh I fails to teach or suggest a return pole having a medium-facing surface area that is at least two orders of magnitude greater than that of the write pole. Shukh I does describe a head having a return pole that has a surface area that is “substantially” larger than that of the write pole. Shukh I, col. 4, lines 26-27. However, Applicant has found no mention in Shukh I of the return pole having a medium-facing surface that is *at least two orders of magnitude greater* than the medium-facing surface of the write pole. Thus, Shukh I fails to teach or suggest a specific relationship between the sizes of the surface areas of the write pole tip and the return pole tip. Consequently, Shukh I fails to teach or suggest the heads recited in claims 1, 13, and 23.

The Examiner’s Addendum to the Office Action does not alter the above conclusion. In the Addendum, the Examiner analogized the leading edge of the layer 50 to the second pole tip, and the medium-facing surface of the pole 40 as the first pole tip. However, as indicated above, Shukh I expressly states that the pole 40 has a *larger* surface area than the pole 38. The pole 40 is thus the return, or second, pole. The pole 38 must be the first pole. Consequently, the Examiner’s analysis regarding FIG. 2 of Shukh I is inapposite to the claims in the present

application. Accordingly, Applicant respectfully submits that claims 1, 13, and 23 are allowable over the cited references.

Claims 2 and 8-10 depend upon claim 1. Claims 14 and 20-22 depend upon independent claim 13. Claims 29 and 30 depend upon independent claim 23. Consequently, the arguments herein apply with full force to claims 2, 8-10, 14, 20-22, 29, and 30. Accordingly, Applicant respectfully submits that claims 2, 8-10, 14, 20-22, 29, and 30 are allowable over the cited references.

Claims 2 and 14 are separately allowable over the cited references. Claims 2 and 14 recite that the write pole tip has a trailing corner disposed closest to the trailing end and that the magnetic flux from the write pole tip has a maximum density from the trailing corner and at an angle that is not perpendicular to the write pole tip. As discussed above, claims 1 and 13 recite that the return pole tip is between the write pole tip and the trailing edge. Thus, in effect claims 2 and 14 recite that the (trailing) corner having a maximum density magnetic flux is between the write pole tip and the return pole (which is between the write pole and the trailing edge).

In contrast, Shukh I expressly states that the trailing corner of the trailing pole is used in writing. Shukh I, col. 4, lines 1-3 and FIG. 2, item 49. Thus, the corner of the write pole tip cannot reside between the return pole 40 and the write pole 38. Consequently, Shukh I fails to teach or suggest the trailing corner recited in claims 2 and 14. Accordingly, Applicant respectfully submits that claims 2 and 14 are separately allowable over the cited references.

Claims 8, 20, and 29 are also separately allowable over the cited references. Claims 8, 20, and 29 recite a trailing corner analogous to that in claims 2 and 14. Consequently, the arguments herein with respect to claims 2 and 14 also apply with full force to claims 8, 20, and 29. In addition, claims 8, 20, and 29 also recite specific angles for the magnetic flux emanating from the

trailing corner. Applicant has found no mention in Shukh I of such specific angles for the magnetic flux from the trailing corner of the write pole tip. Consequently, claims 8, 20, and 29 are separately allowable over the cited references.

In the above-identified Office Action, the Examiner also rejected claims 7, 17, 19, 25, and 28 under 35 U.S.C. § 103 as being unpatentable over Shukh I in view of official notice in concern to the dimensions and spacing of the various components.

Claim 7 depends upon independent claim 1. Claims 17 and 19 depend upon independent claim 13. Claims 25 and 28 depend upon independent claim 23. Consequently, the arguments herein apply with full force to claims 7, 17, 19, 25, and 28. In particular, Shukh I fails to teach or suggest the recited write (first) and return (second) pole tips.

The Examiner's official notice regarding the recited dimensions fails to remedy the basic defects of Shukh I, particularly those regarding the orientations of the write (first) and return (second) poles. Thus, regardless of the specific dimensions selected, the recited write (first) and return (second) poles still have the same relationship to the trailing edge and each other. Consequently, even if the Examiner's official notice is combined with Shukh I, the combination would still fail to teach or suggest the recited heads. Consequently, Shukh I in view of the Examiner's official notice fails to teach or suggest the heads recited in claims 7, 17, 19, 25, and 28. Accordingly, Applicant respectfully submits that claims 7, 17, 19, 25, and 28 are allowable over the cited references.

In the above-identified Office Action, the Examiner also rejected claims 3, 11, 12, 15, and 25 under 35 U.S.C. § 103 as being unpatentable over Shukh I in view of U.S. Patent No. 6,954,340 (Shukh II).

Claims 3, 11 and 12 depend on independent claim 1. Claims 15 and 25 depend upon independent claims 13 and 23, respectively. Consequently, the arguments herein apply with full force to claims 3, 11, 12, 15, and 25. In particular, Shukh I fails to teach or suggest the heads recited in claims 3, 11, 12, 15, and 25.

The cited portion of Shukh II fails to remedy the defects of Shukh I. Even if the magnetoresistive sensor of Shukh II were combined with the teachings of Shukh I, the combination would still fail to teach or suggest the recited combination including the recited write (first) pole tip and return (second) pole tip. Accordingly, Applicant respectfully submits that claims 3, 11, 12, 15, and 25 are allowable over the cited references.

New claims 35-37 depend upon independent claims 1, 13, and 23, respectively. Consequently, the arguments herein apply with full force to claims 35-37. Accordingly, Applicant respectfully submits that claims 35-37 are allowable over the cited references.

Applicant's attorney believes that this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

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Date

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